

ABSTRACT OF THE INVENTION

An algorithm is implemented in a circuit for sensing P-waves in a pacemaker to ensure ventricular pacing synchronization with sensed atrial depolarization waves. VDD and VDDR pacing (atrial synchronized, ventricular inhibited pacing) are implemented via a single standard ventricular pacing lead (unipolar or bipolar) and preferably a subcutaneous electrode array (SEA). Specifically, an implanted ventricular lead provides ventricular pacing and ventricular sensing while the SEA enable atrial sensing, thus eliminating the need for an implanted atrial lead or a specialized single pass VDD lead. The algorithm manages the sensed cardiac waves to effect a desired pacing regimen based on the input from the single lead and SEA.

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